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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/050,377	01/15/2002	Chienchung Chang	PA020089	6172
23696	7590	12/13/2004	EXAMINER	
Qualcomm Incorporated Patents Department 5775 Morehouse Drive San Diego, CA 92121-1714			SWERDLOW, DANIEL	
			ART UNIT	PAPER NUMBER
			2644	

DATE MAILED: 12/13/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/050,377

**Applicant(s)**

CHANG ET AL.

**Examiner**

Daniel Swerdlow

**Art Unit**

2644

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

**DETAILED ACTION*****Drawings***

1. Figure 1 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Applicant admits in paragraph 1003 of the disclosure that Figure 1 is “a block diagram of a *traditional* echo canceller” (emphasis added).

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, “an analog to digital converter for producing an audio signal within said third frequency band, wherein loudspeaker is configured for playing said audio signal” must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. Since it is clear that the claim recitation was intended as “a digital to analog converter” examiner makes prior art rejections below based on that interpretation.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified

and informed of any required corrective action in the next Office action. The objections to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1 and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. Claim 1 recites the limitation "said input signal" in lines 12-13. There is insufficient antecedent basis for this limitation in the claim. To advance prosecution to the maximum possible extent, examiner makes prior art rejections below based on the interpretation that "said input signal" is intended as "said audible signals".

6. Claim 15 recites the limitation "means for an analog to digital converter configured for producing an audio signal" in lines 3-4. It is unclear whether the claim is limited to an analog to digital converter or to means for producing an audio signal. To advance prosecution to the maximum possible extent, examiner makes prior art rejections below showing that the prior art anticipates either interpretation.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

Art Unit: 2644

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1 through 20 are rejected under 35 U.S.C. 102(b) as being anticipated by Lu (US Patent 6,052,462).

9. Regarding Claim 1, Lu discloses a double talk detection and echo control circuit (i.e., a system for echo cancellation) (Fig. 1) comprising: a detection filter and decision stage (Fig. 1, reference 48, 54; column 4, lines 24-33) that monitors the presence of a near-end speech signal in a microphone signal in a frequency range of about 3750 Hz to 4000 Hz (i.e., monitoring voice energy in a first frequency band) (column 4, lines 39-42); an AFIR (i.e., adaptive) filter (Fig. 1, reference 38; column 4, lines 8-23) that generates an estimated echo signal (i.e., produces an echo signal) determined by internal coefficient values (i.e., based on a set of coefficients) with adaptation performed when near end speech is absent from the microphone signal (i.e., holds coefficients constant in double talk condition); a microphone (i.e., means for inputting audible signals) (Fig. 1, reference 30; Fig. 3; column 4, lines 34-36) that produces signals in a range from 0 to 4000 Hz (i.e., in a second frequency wider than and overlapping the first frequency band) and the estimated echo signal cancels echo from the microphone signal (column 3, lines 60-65).

10. Regarding Claim 2, Lu further discloses a loudspeaker (Fig. 1, reference 24; column 3, lines 45-50) that audibly transmits (i.e., plays) a signal filtered by the removal filter to remove frequency components in a range from 3750 Hz to 4000 Hz or, in other words, retaining frequency components between 0 and 3750 Hz (column 3, lines 28-34) (i.e., in a third frequency band [0 to 3750 Hz] essentially equal to the difference between the first frequency band [3750 Hz to 4000 Hz] and the second frequency band [0 to 4000 Hz]).

11. Regarding Claim 3, Lu further discloses an adaptation control signal (i.e. a control signal for controlling the adaptive filter) (Fig. 1, reference 46; column 4, lines 56-61) that causes the filter to discontinue adaptation (i.e., hold coefficients constant) based on detection of near-end microphone signals (i.e., double talk condition) (column 4, lines 51-56).

12. Regarding Claim 4, Lu further discloses an analog to digital converter (Fig. 1, reference 32; column 3, lines 55-59) that receives the microphone signal and converts it to a digital signal (i.e., producing voice data based on the audible signals picked up by the microphone in the second frequency band) and the detection filter and decision stage (i.e., double talk detector) (Fig. 1, reference 48, 54; column 4, lines 24-33) monitoring the presence of a near-end speech signal in a microphone signal (i.e., operating on the voice data to detect the double talk condition).

13. Regarding Claim 5, Lu further discloses a digital to analog converter (Fig. 1, reference 22; column 3, lines 46-50) that receives a filtered signal ( $x(k)'$ ) and converts it to an analog signal (i.e., produces an audio signal) for a loudspeaker (Fig. 1, reference 24) for audible transmission (i.e., for playing the audio signal). Lu further discloses the filtered signal ( $x(k)'$ ) has frequency components between 3750 Hz and 4000 Hz removed (i.e., is within the third frequency band) (column 3, lines 31-34). In addition, Lu discloses an analog to digital converter (Fig. 1, reference 14; column 3, lines 10-14) that is configured by the connection of its output to the removal filter (Fig. 1, reference 18) for producing the audio signal within the third frequency band for audible transmission by the loudspeaker as above. As such, while examiner has interpreted the claim as intending to recite a digital to analog converter as depicted in applicant's Fig. 5 as reference 499, Lu anticipates the claim as presented also.

Art Unit: 2644

14. Claims 6 through 10 are essentially similar to Claims 1 through 5, respectively, and are rejected on the same grounds.

15. Regarding Claim 11, in addition to the elements cited above apropos of Claim 1, Lu further discloses implementation using appropriately programmed digital signal processing integrated circuits (i.e., a microprocessor system) (column 5, lines 19-23).

16. Regarding Claims 12 through 15, the additional limitations are essentially similar to those of Claims 2 through 5, respectively. As such, the claims are anticipated by Lu for reasons stated above apropos of those claims.

17. Claims 16 through 20 are essentially similar to Claims 1 through 5, respectively, and are rejected on the same grounds.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Swerdlow whose telephone number is 703-305-4088. The examiner can normally be reached on Monday through Friday between 8:00 AM and 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Forrester Isen can be reached on 703-305-4386. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2644

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Daniel Swerdlow, Patent Examiner Art Unit 2644